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EXAMINER
AJIBADE AKONAI, OLUMIDE

ART UNIT	PAPER NUMBER
2617	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/597,543	HABETHA ET AL.	
	Examiner	Art Unit	
	OLUMIDE T. AJIBADE AKONAI	2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 July 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-37* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,7-15,18,19,25,27-35 and 37* is/are rejected.

7)☒ Claim(s) *1-37* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10 July 2008* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *7/28/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claims 1, and 9 objected to because of the following informalities:

Regarding claim 1, “of devices” should be inserted between "plurality” and “transmitting”, on line 5.

Regarding claim 9, “of devices” should be inserted between "plurality” and “a table”, on line 2.

Claims 1-37 are objected to because of the following informalities: The claims comprise numbers in parenthesis. The numbers in parenthesis in the claims should be deleted.

Appropriate correction is required.

Claim Rejections - 35 USC § 101

2. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 34 and 37 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claims 34 and 37 are directed to a method and an apparatus. A single claim which claims both an apparatus and the method steps of using the apparatus is indefinite under 35 U.S.C. 112, second paragraph (In Ex parte Lyell, 17 USPQ2d 1548 (Bd. Pat. App. & Inter. 1990), a claim directed to an automatic transmission workstand and the method steps of using it was held to be ambiguous and properly rejected under 35 U.S.C. 112, second paragraph). Such claims should also be rejected under 35 U.S.C. 101 based on the theory that the

claim is directed to neither a "process" nor a "machine," but rather embraces or overlaps two different statutory classes of invention set forth in 35 U.S.C. 101 which is drafted so as to set forth the statutory classes of invention in the alternative only. Id. at 1551.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 34 and 37 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. A single claim which claims both an apparatus and the method steps of using the apparatus is indefinite under 35 U.S.C. 112, second paragraph. In Ex parte Lyell, 17 USPQ2d 1548 (Bd. Pat. App. & Inter. 1990), a claim directed to an automatic transmission workstand and the method steps of using it was held to be ambiguous and properly rejected under 35 U.S.C. 112, second paragraph. In the present application, claims 34 and 37 recite a method and apparatus (wireless device) and thus is indefinite under 35 U.S.C. second paragraph for the reasons indicated above.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the

applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-4, 7-9, 11-15, 18, 19, 25, 27-35, and 37 are rejected under 35 U.S.C. 102(e) as being anticipated by **Long et al 20060040701** (**hereinafter Long**).

Regarding **claim 1**, Ho discloses a method of decentralized medium access control in a communications network (300) (see fig. 1, p.1, [0017]) including a plurality of devices (301) (wireless devices, see fig. 1, p.1, [0017]), comprising the steps of: dividing time into a sequence of at least one superframe (100) (superframe, see fig. 3, p.3, [0028]); and a first device (301) (wireless devices in the beacon groups, see fig. 1, p.1, [0017], p.3, [0029]) of said plurality transmitting in the superframe (100) at a target beacon transmission time (TBTT) (201) (304, se fig. 3, p.3, [0028]) a beacon frame (400) (beacon 308, see p.3, [0030]-[0031]) that includes a reservation for a planned transmission by a sender device (301) during the superframe (data reservation, see fig. 3, p.3, [0028], [0031]).

Regarding **claim 2** as applied to claim 1, Long further discloses wherein: said first device (301) (wireless devices, see figs. 1 and 2, p.1, [0017], p.2, [0022]-[0023]) is the sender (301) of said planned transmission (see figs. 1 and 2, p.1, [0017], p.2, [0022]-[0023]); and further comprising the steps of; the sender (301) including the reservation in a beacon frame (400) (beacon frame, see fig. 5, p.4, [0035]) in all superframes (100) during which the reservation is active (see fig. 3, p.3, [0028]), and b. including, by a receiver device (301) of the planned transmission, said reservation in a

beacon frame (400) in all superframes (100) during which the reservation is active (see fig. 5, p.4, [0038]).

Regarding **claim 3**, Long further discloses the method of claim 1, further comprising the step of grouping the beacon frame (400) transmitted by each of the plurality of devices (301) into the superframe (100) (see fig. 3, p.3, [0027]-[0028]) as at least one beacon period (101) having a starting point at a beacon period start time (BPST) (201) (304, se fig. 3, p.3, [0028]) and followed by a data transmission phase (102) (302, see fig. 3, p.3, [0031]).

Regarding **claim 4**, Long further discloses the method of claim 1, further comprising the step of prior to a new or a change of an existing reservation of the sender device (301), the sender device (301) negotiating with a receiver device (301) of the transmission that is planned during the reservation (transmitting data reservation information element 510, see fig. 5, p.4, [0038]-[0039]).

Regarding **claim 7**, Long further discloses the method of claim 1, further comprising the step of including in the beacon frame (400) of the first device (301) a starting time of the reservation relative to a reference point (705) (711) selected from the group consisting of the TBTT (201) of the first device (301), the BPST (201) of the beacon period in which the first device (301) is transmitting the beacon frame (400), the beginning of the superframe (205), a time period of the superframe (100), and a time slot of the superframe (205) (508, see fig. 5, p.4, [0037]).

Regarding **claim 8**, Long further discloses the method of claim 7, wherein: the starting time of the reservation is given relative to said reference point (705) (711) in

the next following superframe (206), in which said first device (301) will transmit its next beacon frame (400) (508, see fig. 5, p.4, [0037]); and if proposed by the receiver device, the at least one alternative available time for the reservation is given relative to a reference point (705) (711) in the next following superframe (206), in which said receiver device will transmit its next beacon frame (400).

Regarding **claim 9**, Long further discloses the method of claim 1, further comprising the steps of: maintaining by each device of said plurality a table of all planned reservations (306) received or sent by the device (p.4, [0040], p.5, [0043]).

Regarding **claim 11**, Long further discloses the method of claim 1, further comprising the steps of: defining said superframe as comprising a plurality of medium access time slots; and defining a reservation as a starting time slot (705) (711) of said plurality of medium access time slots and a duration (706) (712) as a number of medium access time slots (see fig. 5, p.4, [0035]-[0037]).

Regarding **claim 12**, Long further discloses the method of claim 1, further comprising the steps of: defining said superframe as comprising a plurality of time units; and defining a reservation as a starting time in time units (705) (711) and a duration (706) (712) as a number of time units (see fig. 5, p.4, [0035]-[0037]).

Regarding **claim 13**, Long further discloses the method of claim 1, further comprising the steps of: defining said superframe as comprising a plurality of medium access time slots; and defining a reservation as at least one bit in a bitmap (708) (712) comprising at least one bit per each medium access time slot of said plurality of medium access time slots (see fig. 5, p.4, [0035]-[0037]).

Regarding **claim 14**, Long further discloses the method of claim 1, further comprising the steps of: defining said superframe as comprising a plurality of medium access time slots; and defining a reservation as at least one element selected from the group consisting of a reservation period (705) (710), a reservation offset (705) (711), a reservation period offset (705) (710) (711), a reservation duration, a bitmap (706) (712) of at least one medium access time slot and a type of reservation (709) (see fig. 5, p.4, [0035]-[0037]).

Regarding **claim 15**, Long further discloses the method of claim 1, further comprising the step of defining a reservation as one element selected from the group consisting of: - a plurality of reservations per superframe (100) and valid for a single superframe (100), - a plurality of reservations per superframe (l00) and valid for a plurality of superframes (100), - single reservation per superframe (l00) and valid for a single superframe (l00), and - single reservation per superframe (l00) and valid for a plurality of superframes (100) (see fig. 5, p.4, [0035]-[0038], [0040]).

Regarding **claim 18**, Long further discloses the method of claim 2, further comprising the step of implicitly negotiating the reservation using a first beacon frame (400) of the sender device (301) and a first beacon frame (400) of the receiver device (301) (see fig. 5, p.4, [0038]).

Regarding **claim 19**, Long further discloses the method of claim 1, further comprising the step of including availability information (1105) in a beacon frame (400) of a device (301) (see fig. 5, p.4, [0035], [0038]).

Regarding **claim 25** as applied to claim 2, Long further discloses wherein the beacon frame (400) (see fig. 5, p.4, [0035]) of the transmitting and including steps comprises a distributed reservation protocol (DRP) information element (IE) (700) that includes information regarding the position of at least one reservation (707) in the superframe (100) (see fig. 5, p.4, [0035]).

Regarding **claim 27** as applied to claim 1, Long further discloses wherein: the transmitting step includes in the beacon frame (400) information of a reservation selected from the group consisting of a starting point (7 05) (711) and duration (706) (712), and a bitmap (708) (712); and the including step is optional (see fig. 3, p.3, [0028]).

Regarding **claim 28**, Long further discloses the method of claim 1, further comprising the step of respecting the reservation by all devices (301) receiving a beacon frame (400) that includes the reservation (see p.3, [0030]-[0031], p.4, [0038]).

Regarding **claim 29**, Long further discloses the method of claim 1, further comprising the steps of: including information on a direction of the planned transmission in the beacon frame (400) (see p.3, [0030]-[0031], p.4, [0038]); and only devices (301) within a transmission range of a receiver device (301) respecting the reservation, in case of a unidirectional planned transmission (see p.3, [0030]-[0031], p.4, [0038]).

Regarding **claim 30** as applied to claim 25, Long further discloses wherein only the receiver device (301) performs the including step to include the reservation IE (700) in the beacon frame (400) (see fig. 5, p.4, [0035]).

Regarding **claim 31** as applied to claim 25, Long further discloses wherein only receiver devices (301) and all 1-hop neighbor devices (301) of receiver devices (301) perform the including step to include the reservation IE (700) in the beacon frame (400) (see fig. 5, p.4, [0035]).

Regarding **claim 32** as applied to claim 25, Long further discloses wherein the sender device (301), receiver devices (301), and all 1-hop neighbor devices (301) of the sender device (301) and receiver devices (301) perform the including step to include the reservation IE (700) in a beacon frame (400) (see p.3, [0030]-[0031], p.4, [0038]).

Regarding **claim 33**, Long further discloses the method of claim 27, further comprising the steps of: - in case of a Soft Reservation, starting an own transmission if the sender device (301) does not use the reserved time; - in case of a Hard Reservation, not accessing the medium if the sender device (301) of the planned transmission does not use the reserved time; and - in case of a Beacon Period Reservation, reserving the time for beacon transmission only (see p.3, [0030]-[0031], p.4, [0038]).

Regarding **claim 35**, Long discloses a wireless device (301) (wireless devices, see figs. 1 and 2, p.1, [0017], p.2, [0022]-[0023]) that reserves the medium (310) in a distributed manner, comprising: an antenna (307) for sending and receiving messages over a wireless medium (310) (see figs. 1 and 2, p.1, [0017], p.2, [0022]-[0023]); a receiver (302) coupled to the antenna to receive messages transmitted over the wireless medium (310) (206, see fig. 2, p.2, [0023]); a transmitter (306) coupled to the antenna (307) to transmit messages over the wireless medium (206, see fig. 2, p.2,

[0022]-[0023]); a distributed reservation processing module (304) to perform distributed reservation of the medium (310) (MAC 202 performing distributed reservation protocol, see figs. 2 and 3, p.2, [0023], p.3, [0031]); a processor (303) to divide time into a sequence of at least one superframe (100) (wireless device has a processor to divide the time into at least one superframe, see figs. 2 and 3, p.3, [0028], [0031]), each said superframe (100) having at least one beacon period (101) (300, see fig. 3, p.3, [0028]) that starts at a target Beacon Period Start Time (BPST) (201) and includes at least one beacon slot (304, see fig. 3, p.3, [0028]), said beacon period (101) being followed in the superframe (100) by a data transmission phase (I02) (302, see fig. 3, p.3, [0031]), and coupled to: i. the transmitter (306) and the receiver (302) to send and receive, respectively, beacon frames (400) during said beacon period (101) and data during said data transmission phase (102) of the superframe (100) (see fig. 3, p.3, [0029]-[0030]), ii. the distributed reservation processing module to a. manage beacon slot occupancy and data transmission phase reservations (timing structure of superframe structure includes data reservation to transmit information and beacon slot, indicating presence of DRP module in the wireless device, see p.3, [0030]-[0031]); a. format a beacon frame (400) for transmission in the at least one beacon slot (beacon frame, see fig. 5, p.4, [0035]), such that the beacon frame includes a reservation of the medium by the device for data transmission during the data transmission phase (102) (see fig. 5, p.4, [0038]), and b. format a beacon frame (400) for transmission in the at least one beacon slot that responds to reservations received over the medium (310) (transmitting in a beacon slot

after transmitting data reservation element to other wireless devices, see figs. 3 and 5, p.3, [0030], p.4, [0038]-[0040]).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 5, 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Long et al 20060040701** (**hereinafter Long**) in view of **Kondylis et al 6,665,311** (**hereinafter Kondylis**).

Regarding **claim 5** as applied to claim 4, Long discloses the claimed limitation except wherein, said negotiation step comprising the steps of: an initiator device (301) of the reservation transmitting a distributed reservation protocol (DRP)-Request message (1000) comprising at least one reservation description selected from the group consisting of a starting time, and a duration signaled by means of BPST or TBTT offset (705) (711), a reservation period (710), a bitmap indicating the reserved times (706) (708) (712), at least one time slot number, a priority (804), a channel/hopping indicator (806), and a code sequence; and in response to said DRP-Request, said negotiation step further comprises the step of at least one receiver device (301) of the reservation transmitting a distributed reservation protocol (DRP)-Response message (1100) that includes an indicator (1104) selected from the group consisting of the proposed reservation is accepted, the proposed reservation is rejected with an alternative reservation proposal (1105) and the proposed reservation is rejected without an alternative proposal.

Kondylis however discloses an initiator device negotiating a reservation with another device (nodes in a ad hoc wireless network, see col. 4, lines 53-61), the negotiating consisting of the steps of: transmitting a distributed reservation protocol (DRP)-Request message (1000) comprising at least one reservation description selected from the group consisting of a starting time, and a duration signaled by means

of BPST or TBTT offset (705) (711), a reservation period (710), a bitmap indicating the reserved times (706) (708) (712), at least one time slot number, a priority (804), a channel/hopping indicator (806), and a code sequence (reservation request comprising identity of the requesting node and data slots to be reserved, see col. 17, 29-33, and lines 46-52); and in response to said DRP-Request, said negotiation step further comprises the step of at least one receiver device (301) of the reservation transmitting a distributed reservation protocol (DRP)-Response message (1100) that includes an indicator (1104) selected from the group consisting of the proposed reservation is accepted, the proposed reservation is rejected with an alternative reservation proposal (1105) and the proposed reservation is rejected without an alternative proposal (NACK, see col. 18, lines 20-37).

It would therefore have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Kondylis by having a node in an ah hoc wireless network transmit a reservation request for a beacon slot to other neighbor nodes in the network, into the system of Long for the benefit of providing a conflict-free broadcast schedule in the network.

Regarding **claim 10** as applied to claim 1, Long discloses the claimed limitation except further comprising the steps of: a receiver device (301) of said reservation sending a poll packet to the sender device (301); upon receipt of the poll packet, the sender device (301) sending at least one data packet to the receiver device (301); and the receiver device (301) acknowledging receipt of at least one data packet by transmitting an acknowledgement (ACK) packet. Kondylis however, further discloses a

receiver device and a sender device (nodes in a ad hoc wireless network, see col. 4, lines 53-61), the receiver device (301) for a reservation sending a poll packet to the sender device (301) (see fig. 13, col. 21, 65-67, col. 22, lines 1-12); upon receipt of the poll packet, the sender device (301) sending at least one data packet to the receiver device (301) (see fig. 13, col. 21, 65-67, col. 22, lines 1-12); and the receiver device (301) acknowledging receipt of at least one data packet by transmitting an acknowledgement (ACK) packet (see fig. 13, col. 21, 65-67, col. 22, lines 1-12).

Allowable Subject Matter

8. Claims 6, 16, 17, 20-24, 26, 36 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Chenxi Zhu and Scott M. Corson disclose "A Five-Phase Reservation Protocol (FPRP) for Mobile Ad Hoc Networks".

Ho et al 7,039,032 discloses multipoll for QOS-Driven wireless LANS.

Montano et al 20030063619 discloses a method of operating a media access controller.

Kuperschmidt et al 20050237965 discloses a method and devices for multicasting information over a network that applied a distributed media access control scheme.

Kim et al 20060087984 discloses a method for informing the availability of reception of traffics and a method for determination of active or inactive state in wireless communication networks using contention based distributed MAC.

Salokennel et al 7,496,081 discloses adaptive beacon period in a distributed network.

Ho 7,068,633 discloses enhanced channel access mechanisms for QOS-Driven wireless LANS.

Benveniste 7,280,517 discloses wireless LANS and neighborhood capture.

Nishiyama et al 20050036475 discloses a wireless communication apparatus, wireless communication method, and computer program.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to OLUMIDE T. AJIBADE AKONAI whose telephone number is (571)272-6496. The examiner can normally be reached on M-F, 8.30p-5p.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Appiah can be reached on 571-272-7904. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

OA

/Charles N. Appiah/
Supervisory Patent Examiner, Art Unit 2617